[0018] CLAIMS

WE CLAIM:

1. A method of maximizing a usage of memory wherein said memory includes a nonvolatile memory and a volatile memory in communication with a digital signal processor (DSP) comprising the steps of:

transferring a jump and lookup table from said nonvolatile memory to said volatile memory, said jump and lookup table providing a sequence of addresses to execute an equalization structure of said DSP;

transferring a plurality of filter coefficients from said nonvolatile memory to said volatile memory, said plurality of filter coefficients provide filter characteristics for said equalization structures;

applying a set of filter coefficients to said equalization structure;

filtering said input signal utilizing said equalization structure and producing an intermediate result wherein said intermediate result is stored for additional filtering;

outputting said intermediate result as an equalized output signal when said sequence of addresses in said jump and lookup table indicates filtering is complete.

2. A method of equalizing an input signal for a digital signal processor (DSP) which produces an output signal having a desired frequency response, comprising the steps of:

transferring a jump and lookup table from nonvolatile memory to volatile memory, said jump and lookup table containing addresses to execute equalization structures of the DSP;

transferring a plurality of filter coefficients from said nonvolatile memory to said volatile memory, said plurality of filter coefficients provide optimum equalization structures to obtain said desired frequency response;

retrieving one of said addresses by use of a first pointer to execute a first equalization structure;

retrieving a corresponding set of filter coefficients by use of a second pointer to provide a first equalization structure;

producing an intermediate result in response to filtering said input signal;

incrementing said first pointer to next said addresses of said jump and lookup table to execute a subsequent equalization structure;

incrementing said second pointer to next said corresponding set of filter coefficients to provide a subsequent equalization structure;

transferring said intermediate signal to said subsequent equalization structure for additional filtering;

incrementing said first pointer and said second pointer to provide next said subsequent equalization structure for additional filtering;

transferring said intermediate result as an equalized output signal when said first pointer indicates filtering is complete.

3. The method of claim 2 wherein said frequency response includes a set of separate frequency bands.

4. The method of claim 2 wherein said equalization structure uses a plurality of equalization structures.

5. The method of claim 4 wherein a first equalization structure has a first filter characteristic and a second filter structure has a second filter characteristic.

6. The method of claim 2 wherein said equalization structure uses one equalization structure repeatedly.

7. The method of claim 2 wherein said input data signal is an audio signal and said jump and lookup table and said sets of filter coefficients are adapted to provide predetermined equalization according to a plurality of frequency bands customized to acoustical characteristics of a predetermined automobile interior.

8. A data system for equalizing a data signal to produce a desired frequency response, comprising:

a digital signal processor (DSP) equalization structure having settable coefficients and invokable on demand for filtering a data signal to produce a filtered signal;

data storage storing said filtered signal as an intermediate result during processing of said data signal;

a coefficient table containing a plurality of coefficient sets, each set being adapted to be transferred to said filter structure as said settable coefficients to provide a filter characteristic for said DSP equalization structure;

a jump and lookup table containing addresses to execute said DSP equalization structure to produce said desired frequency response by sequentially using said intermediate result as said input signal;

a nonvolatile memory;

a volatile memory;

transferring said coefficients sets and said jump and lookup table from said nonvolatile memory to said volatile memory;

9. The data system of claim 8 wherein said input signal is an audio signal.

10. The data system of claim 8 wherein said nonvolatile memory is an EEPROM.

11. The data system of claim 8 wherein said volatile memory is RAM.

15. The data system of claim 8 wherein said DSP equalization structure comprises a plurality of equalization structures.

16. The data system of claim 8 wherein said DSP equalization structure comprises only one equalization structure used repeatedly.

17. The data system of claim 8 wherein said data storage comprises RAM for storing intermediate results.

18. The data system of claim 8 wherein said data storage comprises a register for storing intermediate results.

19. The data system of claim 8 wherein said data storage comprises an accumulator for storing intermediate results.

20. The data system of claim 8 wherein said desired frequency is achieved by equalizing a plurality of frequency bands for at least one channel to compensate for acoustical characteristics of the interior of a vehicle.